

## CLAIMS

### WHAT IS CLAIMED IS:

1. A method of operating on a voice data stream comprising:  
reading at least one word from said voice data stream;  
generating at least one parameter using said at least one word; and  
identifying, based on said at least one parameter, a type of encoding used  
in generating said voice data stream.
2. The method of Claim 1 wherein said type of encoding comprises linear  
G.711,  $\mu$ -law G.711, and A-law G.711.
3. The method of Claim 1 wherein said voice data stream is stored in a voice  
data stream file.
4. The method of Claim 1 wherein said at least one parameter comprises a  
number of words of said voice data stream corresponding to a range of values.
5. The method of Claim 4 wherein said range of values comprises values  
having an absolute value less than or equal to a threshold.
6. The method of Claim 5 wherein said threshold equals the value 5.
7. The method of Claim 4 wherein said range of values comprises values  
having an absolute value greater than a threshold.
8. The method of Claim 7 wherein said threshold equals the value 25,000.

9. The method of Claim 1 wherein said at least one parameter comprises a number of words of said voice data stream having m-law linear equivalents corresponding to a range of values.

10. The method of Claim 9 wherein said range of values comprises values having an absolute value less than or equal to a threshold.

11. The method of Claim 10 wherein said threshold equals the value 5.

12. The method of Claim 9 wherein said range of values comprises values having an absolute value greater than a threshold.

13. The method of Claim 12 wherein said threshold equals the value 25,000.

14. The method of Claim 1 wherein said at least one parameter comprises a number of words of said voice data stream having A-law linear equivalents corresponding to a range of values.

15. The method of Claim 14 wherein said range of values comprises values having an absolute value less than or equal to a threshold.

16. The method of Claim 15 wherein said threshold equals the value 5.

17. The method of Claim 14 wherein said range of values comprises values having an absolute value greater than a threshold.

18. The method of Claim 17 wherein said threshold equals the value 25,000.

19. The method of Claim 1 wherein said at least one parameter comprises a maximum value of all difference values calculated between values of successive words of said voice data stream.

20. The method of Claim 1 wherein said at least one parameter comprises a maximum value of all difference values calculated between successive m-law linear equivalents of said at least one word of said voice data stream.

21. The method of Claim 1 wherein said at least one parameter comprises a maximum value of all difference values calculated between successive A-law linear equivalents of said at least one word of said voice data stream.

22. The method of Claim 1 wherein said at least one parameter comprises a normalized sum of a  $\mu$ -law overflows and an A-law overflows of said at least one word of said voice data stream.

23. The method of Claim 1 wherein said at least one parameter comprises a normalized sum of a  $\mu$ -law zeros and an A-law zeros of said at least one word of said voice data stream.

24. The method of Claim 1 wherein said at least one parameter comprises a normalized difference of a  $\mu$ -law overflows and an A-law overflows of said at least one word of said voice data stream.

25. The method of Claim 1 wherein said at least one parameter comprises a normalized difference of a  $\mu$ -law zeros and an A-law zeros of said at least one word of said voice data stream.

26. The method of Claim 1 further comprising performing one or more tests, each comprising one or more conditions using said at least one parameter.

27. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprise:

determining if a first condition is true, said first condition assessing if a  $\mu$ -law maximum jump discontinuity is greater than a first threshold;

determining if a second condition is true, said second condition assessing if an A-law maximum jump discontinuity is greater than said first threshold;

determining if a third condition is true, said third condition assessing if the difference between said  $\mu$ -law maximum jump discontinuity and a linear maximum jump discontinuity is greater than a second threshold;

determining if a fourth condition is true, said fourth condition assessing if the difference between said A-law maximum jump discontinuity and said linear maximum jump discontinuity is greater than said second threshold;

determining if a fifth condition is true, said fifth condition assessing if a normalized sum of  $\mu$ -law and A-law overflows is above a third threshold;

determining if a sixth condition is true, said sixth condition assessing if a linear overflows percentage is less than a fourth threshold;

determining if a seventh condition is true, said seventh condition assessing if a  $\mu$ -law overflows percentage is greater than a fifth threshold;

determining if an eighth condition is true, said eighth condition assessing if an A-law overflows percentage is greater than said fifth threshold; and

generating a linear G.711 decision if said first through eighth conditions are all true.

28. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprise:

determining if a first condition is true, said first condition assessing if a linear zeros percentage is above a threshold;

determining if a second condition is true, said first condition assessing if a percentage of  $\mu$ -law zeros is below said threshold; and

determining if a third condition is true, said first condition assessing if an A-law zeros percentage is below said threshold.

generating a linear G.711 decision if said first condition and said second condition and said third conditions are all true.

29. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprise:

determining if a first condition is true, said first condition assessing if a normalized difference between the  $\mu$ -law and A-law overflows is greater than a normalized overflows difference threshold;

determining if a second condition is true, said second condition assessing if a normalized difference between the  $\mu$ -law and A-law zeros is greater than said normalized zeros difference threshold;

determining if a third condition is true, said third condition assessing if a number of  $\mu$ -law overflows is greater than a number of A-law overflows;

determining if a fourth condition is true, said fourth condition assessing if an A-law zero percentage is greater than a  $\mu$ -law zero percentage;

generating an A-law decision if said first condition and said second condition and said third condition and said fourth condition are all true;

determining if a fifth condition is true, said fifth condition assessing if the number of said A-law overflows is greater than said number of  $\mu$ -law overflows;

determining if a sixth condition is true, said sixth condition assessing if said  $\mu$ -law zero percentage is greater than said A-law zero percentage; and

generating an  $\mu$ -law decision if said first condition and said second condition and said fifth condition and said sixth condition are all true.

30. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprise:

determining if a first condition is true, said first condition assessing if there are no  $\mu$ -law overflows;

determining if a second condition is true, said second condition assessing if there are no A-law overflows;

determining if a third condition is true if said first condition and said second condition are true, said third condition assessing if an A-law zeros percentage is greater than a  $\mu$ -law zeros percentage;

generating an A-law decision if said third condition is true;

determining if a fourth condition is true if said first condition and said second condition are true, said fourth condition assessing if said  $\mu$ -law zeros percentage is greater than said A-law zeros percentage; and

generating a  $\mu$ -law decision if said fourth condition is true; and

generating an unknown decision if both said third condition and said fourth condition are not true.

31. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprise:

determining if a first condition is true, said first condition assessing if a normalized sum of  $\mu$ -law and A-law zeros is greater than a first threshold;

determining if a second condition is true, said second condition assessing if a normalized difference of A-law and  $\mu$ -law zeros is greater than a second threshold;

determining if a third condition is true if said first condition and said second condition are true, said third condition assessing if a normalized sum of the  $\mu$ -law and A-law overflows is less than a third threshold;

determining if a fourth condition is true if said first condition and said second condition are true, said fourth condition assessing if a normalized difference between the  $\mu$ -law and A-law overflows is less than a fourth threshold;

determining if a fifth condition is true if said third condition and said fourth condition are true, said fifth condition assessing if a A-law zeros percentage is greater than a  $\mu$ -law zeros percentage;

generating an A-law decision if said fifth condition is true;

determining if a sixth condition is true if said third condition and said fourth condition are true, said sixth condition assessing if said  $\mu$ -law zeros percentage is greater than said A-law zeros percentage;

generating an  $\mu$ -law decision if said sixth condition is true; and

generating an unknown decision if both said fifth condition and said sixth condition are not true.

32. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprises:

determining if a first condition is true, said first condition assessing if a normalized sum of the  $\mu$ -law and A-law overflows is greater than a first threshold;

determining if a second condition is true, said second condition assessing if a normalized difference of the  $\mu$ -law and A-law overflows is greater than a second threshold;

determining if a third condition is true if said first condition and said second condition are true, said third condition assessing if a normalized difference of the  $\mu$ -law and A-law zeros is less than a third threshold;



determining if a fourth condition is true if said third condition is true, said fourth condition assessing if an A-law overflows percentage is greater than a  $\mu$ -law overflows percentage;

generating an  $\mu$ -law decision if said fourth condition is true;

determining if a fifth condition is true if said third condition is true, said fifth condition assessing if said  $\mu$ -law overflows percentage is greater than said A-law overflows percentage;

generating an A-law decision if said fifth condition is true; and

generating an unknown decision if both said fourth condition and said fifth condition are not true.

33. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprises:

determining if a first condition is true, said first condition assessing if a normalized sum of  $\mu$ -law and A-law zeros is greater than a first threshold;

determining if a second condition is true, said second condition assessing if a normalized difference of  $\mu$ -law and A-law zeros is greater than a second threshold;

determining if a third condition is true if said first condition and said second condition are true, said third condition assessing if an A-law zeros percentage is greater than a  $\mu$ -law zeros percentage;

generating an A-law decision if said third condition is true;

determining if a fourth condition is true if said first condition and said second condition are true, said fourth condition assessing if said  $\mu$ -law zeros percentage is greater than said A-law zeros percentage; and

generating a  $\mu$ -law decision if said fourth condition is true; and

generating an unknown decision if both said third condition and said fourth condition are not true.

34. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprises:

determining if a first condition is true, said first condition assessing if a normalized sum of  $\mu$ -law and A-law overflows is greater than a first threshold;

determining if a second condition is true, said second condition assessing if a normalized difference of  $\mu$ -law and A-law overflows is greater than a second threshold;

determining if a third condition is true if said first condition and said second condition are true, said third condition assessing if an A-law overflows percentage is greater than a  $\mu$ -law overflows percentage;

generating an  $\mu$ -law decision if said third condition is true;

determining if a fourth condition is true if said first condition and said second condition are true, said fourth condition assessing if said  $\mu$ -law overflows percentage is greater than said A-law overflows percentage;

generating an A-law decision if said fourth condition is true; and

generating an unknown decision if both said third and said fourth conditions are not true.

35. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprises:

determining if a first condition is true, said first condition assessing if an A-law maximum discontinuity jump is greater than a first threshold;

determining if a second condition is true, said second condition assessing if an absolute value of the difference between the A-law maximum discontinuity jump and a  $\mu$ -law maximum discontinuity jump is greater than a second threshold;

generating a  $\mu$ -law decision if said first condition and said second condition are true;

determining if a third condition is true, said third condition assessing if the  $\mu$ -law maximum discontinuity jump is greater than said first threshold;

determining if a fourth condition is true, said fourth condition assessing if the absolute value of the difference between the A-law maximum discontinuity jump and the  $\mu$ -law maximum discontinuity jump is greater than said second threshold; and

generating an A-law decision if said third condition and said fourth condition are true.

36. The method of Claim 26 wherein said one or more conditions of a test of said one or more tests comprises:

determining if a first condition is true, said first condition assessing if a normalized difference between  $\mu$ -law and A-law overflows is greater than two times a normalized difference between  $\mu$ -law and A-law zeros;

determining if a second condition is true, said second condition assessing if a normalized difference between  $\mu$ -law and A-law overflows is greater than a first threshold;

determining if a third condition is true if said first condition and said second condition are true, said third condition assessing if an A-law overflows percentage is greater than a  $\mu$ -law overflows percentage;

generating an  $\mu$ -law decision if said third condition is true;

determining if a fourth condition is true if said first condition and said second condition are true, said fourth condition assessing if said  $\mu$ -law overflows percentage is greater than said A-law overflows percentage;

generating an A-law decision if said fourth condition is true;

generating an unknown decision if both said third and said fourth conditions are not true;

determining if a fifth condition is true, said fifth condition assessing if a normalized difference between  $\mu$ -law and A-law zeros is greater than two times a normalized difference between  $\mu$ -law and A-law overflows;

determining if a sixth condition is true, said sixth condition assessing if a normalized difference between  $\mu$ -law and A-law zeros is greater than a second threshold;

determining if a seventh condition is true if said fifth condition and said sixth condition are true, said seventh condition assessing if an A-law zeros percentage is greater than a  $\mu$ -law zeros percentage;

generating an A-law decision if said seventh condition is true;

determining if an eighth condition is true if said fifth condition and said sixth condition are true, said eighth condition assessing if said  $\mu$ -law zeros percentage is greater than said A-law zeros percentage; and

generating a  $\mu$ -law decision if said eighth condition is true; and

generating an unknown decision if both said seventh condition and said eighth condition are not true.

37. A method of operating on a voice data stream comprising:

reading one or more words of said voice data stream;

determining a first number of words of said voice data stream that corresponds to a first range of values;

determining a second number of words of said voice data stream that corresponds to a second range of values;

generating m-law linear equivalents of said one or more words of said voice data stream;

determining a third number of words corresponding to said m-law linear equivalents of said one or more words that have values within a third range;

determining a fourth number of words corresponding to said m-law linear equivalents of said one or more words that have values within a fourth range;

generating A-law linear equivalents of said one or more words of said voice data stream;

determining a fifth number of words corresponding to said A-law linear equivalents of said one or more words that have values within a fifth range; and

determining a sixth number of words corresponding to said A-law linear equivalents of said one or more words that have values within a sixth range.

38. The method of Claim 37 wherein said first range of values comprises values having an absolute value less than or equal to a threshold.

39. The method of Claim 37 wherein said second range of values comprises values having an absolute value greater than a threshold.

40. The method of Claim 37 wherein said third range comprises values having an absolute value less than or equal to a threshold.

41. The method of Claim 37 wherein said fourth range comprises values having an absolute value greater than a threshold.

42. The method of Claim 37 wherein said fifth range comprises values having an absolute value less than or equal to a threshold.

43. The method of Claim 37 wherein said sixth range comprises values having an absolute value greater than a threshold.

44. The method of Claim 37 further comprising determining a maximum value of all difference values calculated between values of successive words of said voice data stream.

45. The method of Claim 37 further comprising determining a maximum value of all difference values calculated between successive said m-law linear equivalents of said one or more words of said voice data stream.

46. The method of Claim 37 further comprising determining a maximum value of all difference values calculated between successive said A-law linear equivalents of said one or more words of said voice data stream.

48. The method of Claim 37 further comprising determining a normalized sum of  $\mu$ -law overflows and A-law overflows of said one or more words of said voice data stream.

49. The method of Claim 37 further comprising determining a normalized sum of a  $\mu$ -law zeros and A-law zeros of said one or more words of said voice data stream.

50. The method of Claim 37 further comprising determining a normalized difference of  $\mu$ -law overflows and A-law overflows of said one or more words of said voice data stream.

51. The method of Claim 37 further comprising determining a normalized difference of  $\mu$ -law zeros and A-law zeros of said one or more words of said voice data stream.

52. A system for operating on a voice data stream comprising:  
a processor;  
a storage device;  
a set of computer instructions residing in said storage device, said set of computer instructions, when executed by said processor, identifying a type of encoding used in generating said voice data stream.

53. The system of Claim 52 wherein said storage device comprises one of a hard drive, or other memory external to the processor, or memory internal to the processor.

54. The system of Claim 52 further comprising a network interface for receiving a voice data stream.

55. The system of Claim 53 further comprising a media reader capable of reading a media containing a voice data stream file and capable of transmitting a voice data stream of said voice data stream file to said storage device.

56. The system of Claim 52 further comprising a user interface for executing said set of computer instructions.